

2CF9214

<110> LG CHEM, LTD.
<120> Poly(3-hydroxyalkanoate) Block Copolymer Having Shape Memory Effect
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<151> 2005-07-04
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<223> Choi3 (PCR Primer)

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<223> Choi4 (PCR Primer)

<400> 2
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<210> 3
<211> 24
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<223> HJ-PHB-N (PCR Primer)

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<223> HJ-PHB-C (PCR Primer)

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<220>
<223> SCL-1 (PCR Primer)

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20

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<211> 21
<212> DNA
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<223> SCL-2 (PCR Primer)

<400> 6
caaagccagt ggttcgacgt a

21

<210> 7
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> SCL-3 (PCR Primer)

<400> 7
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19

<210> 8
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> SD-BA-N (PCR Primer)

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47

<210> 9
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<212> DNA
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<220>
<223> BA-C (PCR Primer)

2CF9214

<400> 9
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<210> 10
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> SD-phbC-N (PCR Primer)

<400> 10
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<210> 11
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> phbc-c (PCR Primer)

<400> 11
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<210> 12
<211> 756
<212> DNA
<213> Pseudomonas sp. HJ-2

<220>
<221> variation
<222> (482)
<223> n=A, C, G or T

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ggtaacggcga tcagccagcg cctgcattcg gatggcttca ccgtgggtggt gggctgttaat 120

ccctactcca gccgcaaggc ttccctggatt gccacgcaac tcgaggcggg ctttcacttc 180

cactgcattcg actgcgacat caccgactgg gatagcaccc gccaggcattt cgacatggtg 240

cacgagactg tcggcccgat cgatgtattg gtcaacaatg ccggcatcac ccgcgacggc 300

actttccgca agatgtcccc gaaaaactgg aaggcggtga tcgataccaa tctcaccggc 360

ctgttcaaca caaccaagca ggtcatcgag ggcattgtgg ccaaggctg gggacgcgtc 420

atcaacatct cctcaatcaa tggccagcga ggccagttcg ggcagaccaa ctactccgca 480

gncaaggctg gcattcatgg cttcagcatg gccttggccc gcgaggtgag tggcaaggc 540

gtgaccgtca atacggtttc ccctggctac atcaagaccc acatgaccgc ggcgattcgc 600

ccggacatcc tcgaagacat gattactggc attccgtgg gccgtctcg ccagcccgag 660

2CF9214

gagatgcgcct	cgatcggtgc	ctggctggcc	tccgatcagt	ctgcctatgc	caccggcgcc	720
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 <213> Pseudomonas sp. HJ-2

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 <222> (207)
 <223> n=A, C, G or T

<220>
 <221> variation
 <222> (209)
 <223> n=A, C, G or T

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accgctctgg	atagcagtca	ggtggatgaa	gtgatactcg	gccacgtact	caccgcccgt	180
gctggcagaa	taccgctcgc	caggcancng	gtcatcgccg	gcctgccaca	cgccgtaccg	240
gcgatgaccc	tgaacaaggt	ctgtggctcc	ggcctgaaag	ccctgcacct	gggcgcccag	300
gccatccgct	gtggcgatgc	cgaggtggtg	attgccggtg	gcatggagaa	catgagcctg	360
tcgtcctatg	tcctgccccaa	ggcccgacc	ggcctgcgca	tgggccacgc	gcagctggtc	420
gacagcatga	tcgtcgacgg	cctgtggac	gccttcaacg	actaccacat	ggggatcact	480
gccgagaacc	tggtagacaa	gtacggcatc	agccgcgaag	cccaggacga	attcgccgcc	540
gcctcgacg	agaaagccgt	ggccgcattc	gagaccggtc	gcttccgcga	cgagatcg	600
ccggtgagca	ttccgcagcg	caagggcgag	gcgctgagct	tcgacaccga	cgaacagcca	660
cgcgcggca	ccaccgcccga	gtcgctggc	aagctgaaac	cggccttcaa	gaacgacggc	720
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ctggagaagg	cgggctggag	tctggcagag	ctggatctga	tcgaggccaa	tgaagccttc	960
cgcccagg	ccctggccgt	gggtcaggag	ctgggctggg	atgctggcag	ggttaacgtc	1020
aacggcggcg	ccatcgccct	cggccacccc	attggcgct	ccggctgcgc	cgtactggtc	1080
agcctgctgc	atgaaatgct	caggcgcgac	gcgaaaaaaag	gcctcgctac	cctgtgtatc	1140
ggtggcggcc	agggcgtggc	gctggccatc	gagcgcgtga			1179

2CF9214

<210> 14
<211> 1701
<212> DNA
<213> Pseudomonas sp. HJ-2 (SCL-PHA synthase (phac))

<400> 14
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ttcgtcctgc agcaactgctg cttatacgtg gcgcaaaata cttggttcag cggcacgac 120
caaagccagt ggttcgacgt acctgtcgag gcgttggagc aactgcaggc ggactaccaa 180
caacagtggg ccgaacttgg ccagcaattt ctgagctgcc agccgttcgc attcagcgat 240
cgtcgcttcg ccagtggcaa ctggagcgaa ccgctgttcg gttccctggc tgccttctac 300
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ttggcgatt tcgaagtcgg cgtaatctg gccaccaccc ctggtgccgt ggtactggaa 600
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tctctaattcc gtcatctact ggagcgaggc catcaagttt ttctgatgtc ctggcgcaac 780
ttcactcagg aacaggccga catcacctgg gagcagatca tccaggacgg agtcatcagc 840
gccctgcgca ctacccgggc catcagtggt gagcgccacc tgaactgttt gggtttctgc 900
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cagcattccg gcagttgggt gggtgactgg ttgcgtgg tggatcgatcc tggccggccca 1620
cgcaaggctg ccatcactat gctggcagt gccgagttacc ccccgcttga acatgcggcca 1680

2CF9214

ggacgttatg tgaagctatg a

1701

<210> 15
 <211> 3933
 <212> DNA
 <213> Pseudomonas sp. HJ-2 (phb locus)

<400> 15							
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tggtaatgg	gtactgcgag	caatgcggca	cgtatagctc	tggtcaccgg	tggtatgggc		180
ggtatcggt	cggcgatcag	ccagcgctg	catcgggatg	gcttcaccgt	ggtggtggc		240
tgtatccct	actccagccg	caaggcttcc	tggattgcca	cgcaactcga	ggcgggctt		300
cacttccact	gcatcgactg	cgacatcacc	gactgggata	gcacccgcca	ggccttcgac		360
atggtgac	agactgtcg	cccgatcgat	gtattggta	acaatgccgg	catcaccgc		420
gacggcactt	tccgcaagat	gtccccggaa	aactggaagg	cggtgatcga	taccaatctc		480
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cgcgtcatca	acatctcctc	aatcaatggc	cagcgagg	agttcgg	gaccaactac		600
tccgcgg	aggctggcat	tcatggcttc	agcatgg	tggccc	ggtgagtgg		660
aaggcg	ccgtcaatac	gtttccc	ggctacatca	agaccgac	gaccgcgg		720
attcgcc	acatcctcga	agacatgatt	actggcattc	ccgtgg	tctcggcc		780
cccagg	tcgcctcgat	cgtggcttgg	ctggcctcc	atcagtctc	ctatgccacc		840
ggcgcc	acttccgtgaa	tggcggcatg	aacatgc	gatgcgc	tcgcgc		900
gctcagcc	cat gatgagg	gttccagatg	atcgaagtc	ttatcg	tcgcactc		960
accgc	cgctttcca	ggggagc	ctgc	ccgc	tttgc		1020
acgg	gtatcc	ccgt	atc	ccgt	ggcc		1080
atactcg	acgtactcac	cgccgg	ggc	cgat	ccat		1140
atcgccgg	tgccacacgc	cgtacc	atgacc	acaagg	tctc		1200
ctgaaag	tgcac	cttgg	atccg	gtgc	ggat		1260
gccgg	cgcc	aggcc	atccg	cgat	gggt		1320
ctgcgc	atgg	catgg	gtgg	ccgc	accgg		1380
ttcaac	accacatgg	gatcact	gagaac	ttgg	atcc		1440
cgcga	aggac	actgc	ctgg	acaagg	atgt		1500
accgg	gttcc	ccgttcc	gtgag	ccgc	ggagg		1560
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2CF9214

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tattgctggt	atctgcgcca	cacctacctg	cagaacgacc	tcaaatacg	ggagttggat	3540

2CF9214

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 ccaaagcgct ttgtcctcgg cgcctccggc cacatcgccg gggtgatcaa cccgccagat 3720
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 gaacatgcgc caggacgtta tgtgaagcta tga 3933

<210> 16
 <211> 251
 <212> PRT
 <213> Pseudomonas sp. HJ-2 (NADPH-dependent acetoacetyl-CoA reductase (phbB))

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 Met Gly Gly Ile Gly Thr Ala Ile Ser Gln Arg Leu His Arg Asp Gly
 20 25 30
 Phe Thr Val Val Val Gly Cys Asn Pro Tyr Ser Ser Arg Lys Ala Ser
 35 40 45
 Trp Ile Ala Thr Gln Leu Glu Ala Gly Phe His Phe His Cys Ile Asp
 50 55 60
 Cys Asp Ile Thr Asp Trp Asp Ser Thr Arg Gln Ala Phe Asp Met Val
 65 70 75 80
 His Glu Thr Val Gly Pro Ile Asp Val Leu Val Asn Asn Ala Gly Ile
 85 90 95
 Thr Arg Asp Gly Thr Phe Arg Lys Met Ser Pro Glu Asn Trp Lys Ala
 100 105 110
 Val Ile Asp Thr Asn Leu Thr Gly Leu Phe Asn Thr Thr Lys Gln Val
 115 120 125
 Ile Glu Gly Met Leu Ala Lys Gly Trp Gly Arg Val Ile Asn Ile Ser
 130 135 140
 Ser Ile Asn Gly Gln Arg Gly Gln Phe Gly Gln Thr Asn Tyr Ser Ala
 145 150 155 160
 Xaa Lys Ala Gly Ile His Gly Phe Ser Met Ala Leu Ala Arg Glu Val
 165 170 175
 Ser Gly Lys Gly Val Thr Val Asn Thr Val Ser Pro Gly Tyr Ile Lys
 180 185 190
 Thr Asp Met Thr Ala Ala Ile Arg Pro Asp Ile Leu Glu Asp Met Ile
 195 200 205
 Thr Gly Ile Pro Val Gly Arg Leu Gly Gln Pro Glu Glu Ile Ala Ser
 210 215 220

2CF9214

Ile Val Ala Trp Leu Ala Ser Asp Gln Ser Ala Tyr Ala Thr Gly Ala
 225 230 235 240

Asp Phe Ser Val Asn Gly Gly Met Asn Met Gln
 245 250

<210> 17

<211> 392

<212> PRT

<213> Pseudomonas sp. HJ-2 (beta-ketothiolase (phbA))

<400> 17

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Phe Gln Gly Ser Leu Ala Gly Thr Pro Ala Val Glu Leu Gly Ala Thr
 20 25 30

Val Ile Arg Arg Leu Leu Glu Gln Thr Ala Leu Asp Ser Ser Gln Val
 35 40 45

Asp Glu Val Ile Leu Gly His Val Leu Thr Ala Gly Ala Gly Arg Ile
 50 55 60

Pro Leu Ala Arg Xaa Xaa Val Ile Ala Gly Leu Pro His Ala Val Pro
 65 70 75 80

Ala Met Thr Leu Asn Lys Val Cys Gly Ser Gly Leu Lys Ala Leu His
 85 90 95

Leu Gly Ala Gln Ala Ile Arg Cys Gly Asp Ala Glu Val Val Ile Ala
 100 105 110

Gly Gly Met Glu Asn Met Ser Leu Ser Ser Tyr Val Leu Pro Lys Ala
 115 120 125

Arg Thr Gly Leu Arg Met Gly His Ala Gln Leu Val Asp Ser Met Ile
 130 135 140

Val Asp Gly Leu Trp Asp Ala Phe Asn Asp Tyr His Met Gly Ile Thr
 145 150 155 160

Ala Glu Asn Leu Val Asp Lys Tyr Gly Ile Ser Arg Glu Ala Gln Asp
 165 170 175

Glu Phe Ala Ala Ala Ser Gln Gln Lys Ala Val Ala Ala Ile Glu Thr
 180 185 190

Gly Arg Phe Arg Asp Glu Ile Val Pro Val Ser Ile Pro Gln Arg Lys
 195 200 205

Gly Glu Ala Leu Ser Phe Asp Thr Asp Glu Gln Pro Arg Ala Gly Thr
 210 215 220

Thr Ala Glu Ser Leu Gly Lys Leu Lys Pro Ala Phe Lys Asn Asp Gly
 225 230 235 240

Ser Val Thr Ala Gly Asn Ala Ser Ser Leu Asn Asp Gly Ala Ala Ala
 245 250 255

Val Leu Leu Met Ser Ala Ala Lys Ala Ala Leu Gly Leu Pro Val

2CF9214

260

265

270

Leu Ala Lys Ile Ala Ala Tyr Ala Asn Ala Gly Val Asp Pro Ala Ile
 275 280 285
 Met Gly Ile Gly Pro Val Ser Ala Thr Arg Ser Cys Leu Glu Lys Ala
 290 295 300
 Gly Trp Ser Leu Ala Glu Leu Asp Leu Ile Glu Ala Asn Glu Ala Phe
 305 310 315 320
 Ala Ala Gln Ala Leu Ala Val Gly Gln Glu Leu Gly Trp Asp Ala Gly
 325 330 335
 Arg Val Asn Val Asn Gly Gly Ala Ile Ala Leu Gly His Pro Ile Gly
 340 345 350
 Ala Ser Gly Cys Arg Val Leu Val Ser Leu Leu His Glu Met Leu Arg
 355 360 365
 Arg Asp Ala Lys Lys Gly Leu Ala Thr Leu Cys Ile Gly Gly Gln
 370 375 380
 Gly Val Ala Leu Ala Ile Glu Arg
 385 390

<210>

18

<211>

566

<212>

PRT

<213>

Pseudomonas sp. HJ-2 (SCL-PHA synthase (phaC))

<400> 18

Met Asp Asn Gly His Thr Phe Ala His Tyr Trp Ser Gly Gln Ala Pro
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Phe Ile Ala Ser Phe Val Leu Gln Gln Leu Arg Leu Tyr Val Ala Gln
 20 25 30

Asn Thr Trp Phe Ser Gly His Asp Gln Ser Gln Trp Phe Asp Val Pro
 35 40 45

Val Glu Ala Leu Glu Gln Leu Gln Ala Asp Tyr Gln Gln Gln Trp Ala
 50 55 60

Glu Leu Gly Gln Gln Leu Leu Ser Cys Gln Pro Phe Ala Phe Ser Asp
 65 70 75 80

Arg Arg Phe Ala Ser Gly Asn Trp Ser Glu Pro Leu Phe Gly Ser Leu
 85 90 95

Ala Ala Phe Tyr Leu Leu Asn Ser Gly Phe Leu Leu Lys Leu Leu Glu
 100 105 110

Leu Leu Pro Ile Asp Glu Gln Lys Pro Arg Gln Arg Leu Arg Tyr Leu
 115 120 125

Ile Glu Gln Ala Ile Ala Ala Ser Ala Pro Ser Asn Phe Leu Leu Ser
 130 135 140

Asn Pro Asp Ala Leu Gln Arg Leu Val Glu Thr Gln Gly Ala Ser Leu
 145 150 155 160

2CF9214

Leu Ser Gly Leu Leu His Leu Ala Ser Asp Leu Gln Ala Gly Lys Leu
 165 170 175

Arg Gln Cys Asp Leu Gly Asp Phe Glu Val Gly Val Asn Leu Ala Thr
 180 185 190

Thr Pro Gly Ala Val Val Leu Glu Thr Pro Leu Phe Gln Leu Ile Gln
 195 200 205

Tyr Ser Pro Leu Ser Glu Thr Gln Tyr Gln Arg Pro Ile Phe Met Val
 210 215 220

Pro Pro Trp Ile Asn Lys Tyr Tyr Ile Leu Asp Leu Gly Pro Glu Asn
 225 230 235 240

Ser Leu Ile Arg His Leu Leu Glu Arg Gly His Gln Val Phe Leu Met
 245 250 255

Ser Trp Arg Asn Phe Thr Gln Glu Gln Ala Asp Ile Thr Trp Glu Gln
 260 265 270

Ile Ile Gln Asp Gly Val Ile Ser Ala Leu Arg Thr Thr Arg Ala Ile
 275 280 285

Ser Gly Glu Arg His Leu Asn Cys Leu Gly Phe Cys Ile Gly Gly Thr
 290 295 300

Met Leu Ser Cys Ala Leu Ala Val Leu Ala Ala Arg Gly Asp Gln Asp
 305 310 315 320

Ile Ala Ser Leu Ser Leu Phe Ala Thr Phe Leu Asp Tyr Leu Asp Thr
 325 330 335

Gly Pro Ile Ser Val Phe Val Asp Glu Gln Leu Val Ala Tyr Arg Glu
 340 345 350

Arg Thr Ile Gly Gly His Gly Gly Lys Cys Gly Leu Phe Arg Gly Glu
 355 360 365

Asp Met Gly Asn Thr Phe Ser Leu Leu Arg Pro Asn Glu Leu Trp Trp
 370 375 380

Asn Tyr Asn Val Asp Lys Tyr Leu Lys Gly Gln Lys Pro Leu Ala Leu
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Gly Leu Leu Phe Trp Asn Asn Asp Ser Thr Asn Leu Pro Gly Pro Leu
 405 410 415

Tyr Cys Trp Tyr Leu Arg His Thr Tyr Leu Gln Asn Asp Leu Lys Ser
 420 425 430

Gly Glu Leu Asp Leu Cys Gly Val Lys Leu Asp Leu Arg Ala Ile Asp
 435 440 445

Ala Pro Ala Tyr Ile Leu Gly Thr His Asp Asp His Ile Val Pro Trp
 450 455 460

Arg Ser Ala Tyr Ala Ser Thr Glu Leu Leu Gly Gly Pro Lys Arg Phe
 465 470 475 480

Val Leu Gly Ala Ser Gly His Ile Ala Gly Val Ile Asn Pro Pro Asp
 485 490 495

2CF9214

Arg Asn Lys Arg His Tyr Trp Val Asn Glu His Ile Ala Pro Val Ala
500 505 510

Asp Asp Trp Leu Gln Gly Ala Gln Gln His Ser Gly Ser Trp Trp Gly
515 520 525

Asp Trp Phe Ala Trp Leu Thr Gly Tyr Ala Gly Pro Arg Lys Pro Ala
530 535 540

Ile Thr Met Leu Gly Ser Ala Glu Tyr Pro Pro Leu Glu His Ala Pro
545 550 555 560

Gly Arg Tyr Val Lys Leu
565